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U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES

112740-548

DESIGNATED/ELECTED OFFICE (DO/EO/US)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

CONCERNING A FILING UNDER 35 U.S.C. 371

10/088765

INTERNATIONAL APPLICATION NO
PCT/DE00/03430

INTERNATIONAL FILING DATE
28 September 2000

PRIORITY DATE CLAIMED
30 September 1999

TITLE OF INVENTION

METHOD FOR REMOTE CONTROL CONVERSION OF AT LEAST ONE APPLIANCE IN A LOCAL AREA NETWORK

APPLICANT(S) FOR DO/EO/US

Erich Kamperschroer

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31)
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4))
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☒ A substitute specification
18. ☐ A change of power of attorney and/or address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
22. ☒ Certificate of Mailing by Express Mail
23. ☐ Other items or information

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.101) <div style="font-size: 24pt; font-weight: bold; margin-top: 5px;">10/088765</div>	INTERNATIONAL APPLICATION NO. <div style="font-weight: bold; margin-top: 5px;">PCT/DE00/03430</div>	ATTORNEY'S DOCKET NUMBER <div style="font-weight: bold; margin-top: 5px;">112740-548</div>																							
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <div style="margin-top: 5px;"> <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 </div> <div style="margin-top: 5px;"> <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 </div> <div style="margin-top: 5px;"> <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 </div> <div style="margin-top: 5px;"> <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 </div> <div style="margin-top: 5px;"> <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 </div> <div style="text-align: right; margin-top: 5px;"> ENTER APPROPRIATE BASIC FEE AMOUNT = </div>		CALCULATIONS PTO USE ONLY <div style="border: 1px solid black; height: 100px; margin-top: 5px;"></div>																							
Surcharge of \$130.00 for furnishing the oath or declaration later than _____ months from the earliest claimed priority date (37 CFR 1.492 (e)). <div style="text-align: right; margin-top: 5px;"> <input type="checkbox"/> 20 <input type="checkbox"/> 30 </div>		<div style="border: 1px solid black; padding: 2px; margin-top: 5px;"> \$0.00 </div>																							
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NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.																									
SEND ALL CORRESPONDENCE TO <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> William E. Vaughan (Reg. No. 39,056) Bell, Boyd & Lloyd LLC P.O. Box 1135 Chicago, Illinois 60690 312-807-4292 </div>																									
<div style="text-align: right; margin-top: 20px;"> SIGNATURE William E. Vaughan NAME 39,056 REGISTRATION NUMBER March 20, 2002 DATE </div>																									

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE
OF THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNDER THE PATENT COOPERATION TREATY-CHAPTER II

APPLICANT:	Erich Kamperschroer	DOCKET NO: 112740-548
SERIAL NO:		GROUP ART UNIT:
		EXAMINER:
INTERNATIONAL APPLICATION NO:		PCT/DE00/03430
INTERNATIONAL FILING DATE:		28 September 2000
INVENTION:	METHOD FOR REMOTE CONTROL CONVERSION OF AT LEAST ONE APPLIANCE IN A LOCAL AREA NETWORK	

20 Please amend the above-identified International Application before entry into
the National stage before the U.S. Patent and Trademark Office under 35 U.S.C. §371
as follows:

Please replace the Specification of the present application, including the Abstract, with the following Substitute Specification:

[illegible]

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According to the documents *Funkschau [Radio show] 3/1989, pages 45 and 46; Elektronik [Electronics] 18/1995, pages 50 to 58; Elektronik [Electronics] 17/1996, pages 42 to 47 and pages 48 to 53; Elektronik [Electronics] 4/1997, pages 64 to 72; Elektronik [Electronics] 1/1998, pages 30 to 33; Elektronik [Electronics] 17/1998, pages 74 to 77, pages 78 to 81 and pages 82 to 84?*, the home automation system describes the technical management of buildings and dwellings. This covers everything that relates to the convenience of the occupant. This includes, for example, load and energy management, water heating, lighting, ventilation and heating systems, control of motor-driven elements (for example, blinds, garage doors, roller shutters, etc.) and safety and protection devices (for example, smoke/fire alarms, intruder warning systems, access monitoring systems, motion indicators, etc.).

Furthermore, the term "technical management" also covers the control of any other electrical appliances, from adjusting a clock to switching on a coffee machine. For installation of home automation systems (building bus systems), the following preconditions must be essentially satisfied for successful market introduction:

1. No need for any additional wiring
2. Little cost involved
3. Uniform communication standard
4. Interoperability
5. Plug-and-Play capability

In the recent past, various standards for home bus systems have crystallized out in the field of home automation systems, based on different approaches (consumer-item oriented approach, installation-item oriented approach, computer-hardware oriented approach). However, to a greater or lesser extent, these represent specific solutions for home automation. These standards include:

1. For the consumer-item oriented approach, the Consumer Electronics Bus (CEBus), the ESPRIT Home System (EHS) and the Home Bus System (HBS);
2. for the installation-item oriented approach, the Bati Bus, the European Installation Bus (EIB) and the Smart House; and
3. for the computer-hardware oriented approach, the Local Operating Network (LON) and The Real Time Operating System Nucleus (TRON).

The question as to which of the standards that have been mentioned will, in the end, be adopted, and will thus become the de facto standard, depends essentially on the attractiveness of the respective standard for home automation. However, such a system is attractive and really useful only if there is a wide enough range of products which communicate via this network. Only if the house or dwelling occupier knows, when he/she purchases a washing machine, an electric cooker, etc., that the respective appliance will communicate with his/her home bus system, will he/she perhaps be prepared to pay the additional costs for a home automation system, and to install such a system in his/her house. However, if the manufacturer of these appliances does not know which bus system will win the race in the end, then this manufacturer will not, in fact, be prepared to invest in an expensive interface for the respective bus system in order to subsequently find that the appliances cannot, in fact, be sold any better as a result of this investment.

In order to improve the attractiveness of the home automation system described above, an intelligent home interface (residential gateway) is therefore required which is both cost-effective and offers the manufacturer of appliances which can be remotely controlled for home automation purposes wide variation options for the implementation of the interfaces for the bus system that is used for home automation.

One approach for providing an "intelligent home interface" (residential gateway) as it is known from a German patent application entitled "Anordnung zum Ineinanderübersetzen von Protokolldateneinheiten inkompatibler Netze" [Arrangement for translation of protocol data units of incompatible networks to one another], official application file reference 19904544.5, is to provide for translation of protocol data units of incompatible networks to one another, a telecommunications network (for example, the public telephone network (PSTN), the integrated service digital network (ISDN), the landline network based on the asynchronous digital subscriber line (ADSL), the mobile radio network based on the GSM Standard (first and second mobile radio generation), the mobile radio network based on the UMTS Standard (third mobile radio generation), the mobile network based on the DECT and/or PHS Standard, the global computer network (Internet), the electricity supply network and the broadband cable network) and a local area network (for example, in the form of a home automation system, including a network with a radio transmission path, a PLC

transmission path, an IRDA transmission path, an InstaBus transmission path, an HES Bus transmission path, a twisted pair transmission path or a coaxial cable transmission path) via a telecommunications terminal which is connected to the telecommunications network, has a remote control structure and is allocated to any given x interface for
 5 connection to the local network via a specific network adapter.

Owing to the increasing convergence of communications and information appliances, the telecommunications terminal, in this case, has the "intelligent interface" function ("gateway" function) added to it. The information (for example, control commands, status information, alarm messages, etc.) that needs to be
 10 transmitted for remote control of appliances in a local area network is transmitted from the interface in a specific record format, with a first record format part which indicates the appliance identification and/or the appliance address, a second record format part which contains the control command for the appliance, and a third record format part which contains the control payload information.

15 A telecommunications terminal designed in this way makes it possible to drive any appliances connected to that telecommunications terminal.

To do this, an operator has to use a remote control unit, such as by simply transmitting the appliance identification and the control command, to initiate an action in the appliance defined by the appliance identification.

20 However, in many cases, there is a customer requirement to switch scenarios on and off. A scenario in this case refers to when an instruction is transmitted by the user, a number, that is to say a selection, of the appliances which are connected to the telecommunications terminal being switched to a normal mode for a specific situation. By way of example, the operator might wish to lower all the window roller shutters
 25 and switch on an outside light in the evening by transmission of the control instruction or, when he/she is absent, lower all the window roller shutters and switch on a movement sensor in order to prevent break-ins with this evening scenario or absence scenario.

One way of satisfying this requirement is represented by a so-called scenario
 30 module. This scenario module is an autonomous appliance which is used in a building bus system constructed, for example, using the EIB bus approach. This scenario module drives a number of appliances centrally and, like the appliances to be

controlled, is, for example, connected to the telecommunications terminal. In order to switch a scenario on and off, an instruction is transmitted via the telecommunications terminal to the scenario module, which then, via the house bus that is used, controls the selection of appliances in the mode that is required and desired for that scenario.

- 5 This solution has the disadvantage of the need for additional hardware which, furthermore, communicates only with the building bus system that is being used.

An object to which the present invention is directed is to specify a method for remote control conversion, particularly in home automation systems, which can be implemented cost-effectively and easily, and can be used universally for respectively
10 different network types (for example, the types of networks mentioned above).

SUMMARY OF THE INVENTION

As such, in the method according to the present invention, a unique appliance identification is allocated to each appliance which is connected to a telecommunications terminal and is, thus, included in a local area network, via which
15 the telecommunications terminal can address the respective appliance, in particular for remote control, and via which each appliance is identified. An association between, in each case, one channel and at least one appliance identification is stored in a list, in which case, if one and only one appliance identification is associated with the channel, that channel is associated with a primary data record which contains at least the
20 individual appliance identification and, if at least one appliance identification is associated via at least one control command with that channel, that channel is associated with a secondary data record, which contains at least the one appliance identification with at least one control command in an organized sequence. If a selection of a channel is transmitted to the telecommunications terminal, then the data
25 record associated with that channel is read from the list. If the data record is a primary data record, then, on the basis of the single appliance identification contained in it, an appliance which is connected to the telecommunications terminal is selected and is only driven. If the data record is a secondary data record, then an appliance which is connected to the telecommunications terminal is selected and driven successively on
30 the basis of each appliance identification, and a control command is in each case transmitted to the appliance successively.

The method according to the present invention allows a user of the remote control for at least one appliance which is contained in a local area network and is connected to a telecommunications terminal to be provided with the capability to control a scenario in a home automation system, in which case scenarios can be set by an appliance via a control command. Furthermore, at least one appliance which is connected to the telecommunications terminal in the local area network can be controlled remotely without any additional hardware complexity and independently of the solution approaches used in the home automation system.

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a flowchart relating to the conversion of remote control of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal according to the teachings of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

At the start 1 of the method, which is running in a telecommunications terminal (preferably in the background) so that the normal processes in telecommunications terminals take place substantially without any disturbance, a check is first of all carried out to determine whether a new appliance has been connected to the telecommunications terminal.

If a new appliance has been connected, an appliance number ID is generated for that appliance and uniquely allocated thereto for appliance identification.

The appliance number ID is generated such that a sequential number is allocated to the appliances. As such, the respective most-recently-allocated appliance number ID is incremented, and is allocated to the respective newly connected appliance.

As an alternative to this, it is possible to allocate to the appliance, as the appliance identification, an appliance number ID which is predetermined by that appliance and, after being connected to the telecommunications terminal, is transmitted to this telecommunications terminal during an initialization process.

A combination of alphabetic and numerical characters is also feasible for generating an appliance identification ID.

After allocation of the appliance number ID, the user is requested to state a channel number LK. If a stored secondary data record already exists for this channel number, then the appliance number ID is added to this data record and the system waits for control commands which can be associated with that appliance number to be entered, since the secondary data record implies a scenario control process. Otherwise, a new data record associated with that channel number LK is formed, and the appliance number ID is added to this new data record.

When the new data record has been formed and a scenario control process is intended, the user in the next step enters at least one control command which is associated with the appliance number ID and is stored together with the associated appliance number ID as a secondary data record. If a new data record associated with the channel number LK has been formed, containing only a single appliance number ID, no scenario control is intended. If the channel number is not intended to output any scenario control, then no control command is entered and the appliance number ID is stored as a primary data record.

If the check at the start 1 of the method finds that no new appliance has been connected, a check is carried out to determine whether there is any desire to drive an appliance. If this is the case, the user transmits a channel number LK.

On receiving the channel number LK, the data record which is stored in the list and is associated with this channel number LK is read and evaluated.

If the data record contains only one appliance number ID without any control command, then the data record is a primary data record and only the appliance identified by the appliance number ID is driven, and further user statements are then requested.

If the data record contains at least one appliance number ID with at least one control command, then the data record is a secondary data record and an appliance identified by an appliance number ID is, in each case, driven in sequence, and a control command which has been stored such that it is associated with the respective appliance number ID is transmitted, successively, to the respective appliance. As such, only when all the control commands which have been stored such that they are

associated with an appliance number ID have been processed is the next appliance identified by the next appliance number ID driven, and the control commands which are stored in an associated manner are transmitted. After selection of the last appliance number ID and processing of the control commands which have been stored
5 associated with the appliance number ID, all the appliances which are identified by the appliance number ID contained in the secondary data record are in a state defined by the control commands which are stored associated with the appliance numbers ID.

The statement of the channel number LK thus allows the user to carry out scenario control, in which at least one appliance is changed to a defined state.

10 If no appliance drive is desired, then the method is likewise continued at the start point 1.

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the present invention as set forth in the
15 hereafter appended claims.

ABSTRACT OF THE DISCLOSURE

A method for remote control conversion of at least one appliance in a local area network, wherein a unique association is produced between an appliance identification and the appliance, which is allocated to a logical channel, such that, when one and only one appliance identification is allocated to the channel, a primary data record is allocated to that channel, and when at least one appliance identification is allocated to that channel via at least one control command, that channel is allocated a secondary data record. The data records are stored, associated with the channel, in a list. By transmitting a channel, one and only one appliance is driven on the basis of the data record of this channel, or at least one appliance is driven and a control command is transmitted.

5. A method for remote control conversion of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal as claimed in claim 4, wherein at least one appliance is allocated an alphanumeric appliance identification as the appliance identification, which is transmitted by the at least one appliance.

6. A method for remote control conversion of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal as claimed in claim 4, wherein the at least one appliance is allocated an appliance number as the appliance identification, and the appliance number is incremented by one for each further appliance which is connected to the telecommunications terminal.

REMARKS

15 The present amendment makes editorial changes and corrects typographical errors in the specification, which includes the Abstract, in order to conform the specification to the requirements of United States Patent Practice. No new matter is added thereby. Attached hereto is a marked-up version of the changes made to the specification by the present amendment. The attached page is captioned “**Version With Markings To Show Changes Made**”.

20 In addition, the present amendment cancels original claims 1-3 in favor of new
claims 4-6. Claims 4-6 have been presented solely because the revisions by crossing
out and underlining which would have been necessary in claims 1-3 in order to present
those claims in accordance with preferred United States Patent Practice would have
been too extensive, and thus would have been too burdensome. The present
25 amendment is intended for clarification purposes only and not for substantial reasons
related to patentability pursuant to 35 U.S.C. §§101, 102, 103 or 112. Indeed, the
cancellation of claims 1-3 does not constitute an intent on the part of the Applicants to
surrender any of the subject matter of claims 1-3.

Early consideration on the merits is respectfully requested.

Respectfully submitted,



(Reg. No. 39,056)

William E. Vaughan
Bell, Boyd & Lloyd LLC
P.O. Box 1135
Chicago, Illinois 60690-1135
(312) 807-4292
Attorneys for Applicant

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10

Version With Markings To Show Changes Made

Description

SPECIFICATION

~~Method for remote control conversion~~

5

TITLE OF THE INVENTION

**METHOD FOR REMOTE CONTROL CONVERSION OF
AT LEAST ONE APPLIANCE IN A LOCAL AREA NETWORK**

BACKGROUND OF THE INVENTION

10 An arrangement for translating protocol data units for incompatible networks
to one another is an interface which, in some circumstances, has considerable
intelligence and is referred to in the specialist world by the term "gateway". This
interface carries out functions for layers 3 or above (up to layer 7) in accordance with
the OSI reference model (see Course Leaflets, Year 48, 2/1995, pages 102 to 111 and
N. Klußmann: Lexikon der Kommunikations- und Informations-technik [Dictionary of
15 Communications and Information Technology], 1997, Hüthig-Verlag, pages 360 to
362.

The term network refers to all resources which connect service access points
that are at a distance from one another and provide these services for communication
purposes. This relates not only to networks with a very limited extent, ~~for example~~
20 such as local area networks, but also to networks with a very large extent; for
example, telecommunications networks.

Networks whose protocol data units are incompatible include, in particular,
telecommunications networks -(for example, the public telephone network (PSTN),
the integrated service digital network (ISDN), the landline network that is based on the
25 asynchronous digital subscriber line (ADSL), the mobile radio network based on the
GSM Standard (first and second mobile radio generation), the mobile radio network
based on the UMTS Standard (third mobile radio generation), the mobile network
based on the DECT and/or PHS Standard, the global computer network (Internet), the
electricity supply network and the broadband cable network-~~and~~ as well as any type
30 of local area networks -(for example, the home automation system, ~~comprising~~
including a network with a radio transmission path, a PLC transmission path, an IRDA

transmission path, an InstaBus transmission path, an HES Bus transmission path, a twisted pair transmission path or a coaxial cable transmission path).

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- 30 2. for the installation-item oriented approach, the Bati Bus, the European Installation Bus (EIB) and the Smart House; and

In order to improve the attractiveness of the home automation system described above, an intelligent home interface (residential gateway) is therefore required which, ~~firstly,~~ is both cost-effective and, ~~secondly,~~ offers the manufacturer of appliances which can be remotely controlled for home automation purposes wide variation options for the implementation of the interfaces for the bus system that is used for home automation.

16

Standard, the global computer network (Internet), the electricity supply network and the broadband cable network-) and a local area network -(for example, in the form of a home automation system, ~~comprising~~ including a network with a radio transmission path, a PLC transmission path, an IRDA transmission path, an InstaBus transmission path, an HES Bus transmission path, a twisted pair transmission path or a coaxial cable transmission path ~~by means of~~ via a telecommunications terminal which is connected to the telecommunications network, has a remote control structure and is allocated to any given x interface for connection to the local network via a specific network adapter.

10 Owing to the increasing convergence of communications and information appliances, the telecommunications terminal, in this case, has the “intelligent interface” function (“gateway” function) added to it. The information (for example, control commands, status information, alarm messages, etc.) that needs to be transmitted for remote control of appliances in a local area network is transmitted from
15 the interface in a specific record format, with a first record format part which indicates the appliance identification and/or the appliance address, a second record format part which contains the control command for the appliance, and a third record format part which contains the control payload information.

A telecommunications terminal designed in this way makes it possible to drive
20 any appliances connected to that telecommunications terminal.

To do this, an operator has to use a remote control unit, ~~for example just by~~ such as by simply transmitting the appliance identification and the control command, to initiate an action in the appliance defined by the appliance identification.

However, in many cases, there is a customer requirement to switch scenarios
25 on and off. A scenario in this case ~~means that,~~ refers to when an instruction is transmitted by the user, a number, that is to say a selection, of the appliances which are connected to the telecommunications terminal are being switched to a normal mode for a specific situation. By way of example, the operator might wish to lower all the window roller shutters and switch on an outside light in the evening by transmission of
30 the control instruction or, when ~~he~~ he/she is absent, lower all the window roller shutters and switch on a movement sensor in order to prevent break-ins with this evening scenario or absence scenario.

One way of satisfying this requirement is represented by a so-called scenario module. This scenario module is an autonomous appliance which is used in a building bus system constructed, for example, using the EIB bus approach. This scenario module drives a number of appliances centrally and, like the appliances to be controlled, is, for example, connected to the telecommunications terminal. In order to switch a scenario on and off, an instruction is transmitted via the telecommunications terminal to the scenario module, which then, via the house bus that is used, controls the selection of appliances in the mode that is required and desired for that scenario.

This solution has the disadvantage of the need for additional hardware which, furthermore, communicates only with the building bus system that is being used.

The An object on to which the present invention is based directed is to specify a method for remote control conversion, ~~in particular~~ particularly in home automation systems, which can be implemented cost-effectively and easily, and can be used universally for respectively different network types (for example, the types of networks mentioned above).

~~This object is achieved by the features of patent Claim 1.~~

SUMMARY OF THE INVENTION

~~In As such, in the method according to the present invention—as claimed in claim 1,~~ a unique appliance identification is allocated to each appliance which is connected to a telecommunications terminal and is, thus, included in a local area network, ~~by means of~~ via which the telecommunications terminal can address the respective appliance, in particular for remote control, and ~~by means of~~ via which each appliance is identified. An association between, in each case, one channel and at least one appliance identification is stored in a list, in which case, if one and only one appliance identification is associated with the channel, that channel is associated with a primary data record which contains at least the individual appliance identification; and, if at least one appliance identification is associated ~~by means of~~ via at least one control command with that channel, that channel is associated with a secondary data record, which contains at least the one appliance identification with at least one control command in an organized sequence. If a selection of a channel is transmitted to the telecommunications terminal, then the data record associated with that channel is read from the list. If the data record is a primary data record, then, on the basis of the

single appliance identification contained in it, an appliance which is connected to the telecommunications terminal is selected and is only driven~~[lacuna]~~. If the data record is a secondary data record, then an appliance which is connected to the telecommunications terminal is selected and driven successively on the basis of each
5 appliance identification, and a control command is in each case transmitted to the appliance successively.

The method according to the present invention ~~means that~~ allows a user of the remote control for at least one appliance which is contained in a local area network and is connected to a telecommunications terminal is to be provided with the
10 capability to control a scenario in a home automation system, in which case scenarios can be set by an appliance ~~by means of~~ via a control command. Furthermore, at least one appliance which is connected to the telecommunications terminal in the local area network can be controlled remotely without any additional hardware complexity and independently of the solution approaches used in the home automation system.

~~An exemplary embodiment of the invention will be explained with reference to the single figure, which shows:~~

Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Invention and the Figures.

BRIEF DESCRIPTION OF THE FIGURES

A Figure 1 shows a flowchart relating to the conversion of remote control of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal according to the teachings of the present invention.

DETAILED DESCRIPTION OF THE INVENTION-

~~The method for remote control conversion of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal is described with reference to the flowchart in the figure.~~

At the start 1 of the method, which is running in a telecommunications terminal —especially(preferably in the background-) so that the normal processes in
30 telecommunications terminals take place ~~very largely~~ substantially without any disturbance, a check is first of all carried out to determine whether a new appliance has been connected to the telecommunications terminal.

On receiving the channel number LK, the data record which is stored in the list and is associated with this channel number LK is read and is evaluated.

If the data record contains only one appliance number ID without any control command, then the data record is a primary data record and only the appliance identified by the appliance number ID is driven, and further user statements are then requested.

If the data record contains at least one appliance number ID with at least one control command, then the data record is a secondary data record and an appliance identified by an appliance number ID is, in each case, driven in sequence, and a control command which has been stored such that it is associated with the respective appliance number ID is in each case transmitted, successively, to the respective appliance, in which case, As such, only when all the control commands which have been stored such that they are associated with an appliance number ID have been processed is the next appliance identified by the next appliance number ID driven, and the control commands which are stored in an associated manner are transmitted. After selection of the last appliance number ID and processing of the control commands which have been stored associated with the appliance number ID, all the appliances which are identified by the appliance number ID contained in the secondary data record are in a state defined by the control commands which are stored associated with the appliance numbers ID.

The statement of the channel number LK thus allows the user to carry out scenario control, in which at least one appliance is changed to a defined state.

If no appliance drive is desired, then the method is likewise continued at the start point 1.

~~The exemplary embodiments which have been mentioned represent only some of the embodiments which are possible by virtue of the invention. For example, anyone skilled in the art in this field will be able to create a large number of further embodiments by means of advantageous modifications, without the character (essence) of the invention being changed in the process. These embodiments are likewise covered by the invention.~~

Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto

without departing from the spirit and scope of the present invention as set forth in the hereafter appended claims.

[illegible]

ABSTRACT OF THE DISCLOSURE

Method for remote-control conversion

A-A method for remote control conversion of at least one appliance in a local area network, wherein a unique association is produced between an appliance identification and ~~an~~ the appliance, which is allocated to a logical channel, such that, when one and only one appliance identification is allocated to the channel, a primary data record is allocated to that channel, and when at least one appliance identification is allocated to that channel ~~by means of in each case~~ via at least one control command, that channel is allocated a secondary data record. The data records are stored, associated with the channel, in a list. By transmitting a channel, one and only one appliance is driven on the basis of the data record of this channel, or at least one appliance is driven and a control command is transmitted.

FIGURE

JC13 Rec'd PCT/PTO 20 MAR 2002

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Description

1/ppts

Method for remote control conversion

5 An arrangement for translating protocol data units for
incompatible networks to one another is an interface
which in some circumstances has considerable
intelligence and is referred to in the specialist world
by the term "gateway". This interface carries out
10 functions for layers 3 or above (up to layer 7) in
accordance with the OSI reference model (see Course
Leaflets, Year 48, 2/1995, pages 102 to 111 and N.
Klußmann: Lexikon der Kommunikations- und Informations-
technik [Dictionary of Communications and Information
15 Technology], 1997, Hüthig-Verlag, pages 360 to 362.

The term network refers to all resources which connect
service access points that are at a distance from one
another and provide these services for communication
20 purposes. This relates not only to networks with a very
limited extent, for example local area networks, but
also to networks with a very large extent, for example
telecommunications networks.

25 Networks whose protocol data units are incompatible
include, in particular, telecommunications networks -
for example the public telephone network (PSTN), the
integrated service digital network (ISDN), the landline
network that is based on the asynchronous digital
30 subscriber line (ADSL), the mobile radio network based
on the GSM Standard (first and second mobile radio
generation), the mobile radio network based on the UMTS
Standard (third mobile radio generation), the mobile
network based on the DECT and/or PHS Standard, the
35 global computer network (Internet), the electricity
supply network and the broadband cable network - and
any type of local area networks - for example the home
automation system, comprising a network with a radio
transmission path, a PLC transmission path, an IRDA

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transmission path, an InstaBus transmission path, an
HES Bus transmission path, a twisted pair transmission
path or a coaxial cable transmission path.

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According to the documents ?Funkschau [Radio show] 3/1989, pages 45 and 46; Elektronik [Electronics] 18/1995, pages 50 to 58; Elektronik [Electronics] 17/1996, pages 42 to 47 and pages 48 to 53; Elektronik
5 [Electronics] 4/1997, pages 64 to 72; Elektronik [Electronics] 1/1998, pages 30 to 33; Elektronik [Electronics] 17/1998, pages 74 to 77, pages 78 to 81 and pages 82 to 84?, the home automation system describes the technical management of buildings and
10 dwellings. This covers everything that relates to the convenience of the occupant. This includes, for example, load and energy management, water heating, lighting, ventilation and heating systems, control of motor-driven elements (for example blinds, garage
15 doors, roller shutters etc.) and safety and protection devices (for example smoke/fire alarms, intruder warning systems, access monitoring systems, motion indicators, etc.).

20 Furthermore, the term "technical management" also covers the control of any other electrical appliances, from adjusting a clock to switching on a coffee machine. For installation of home automation systems (building bus systems), the following preconditions
25 must essentially be satisfied for successful market introduction:

1. No need for any additional wiring
2. Little cost involved
- 30 3. Uniform communication standard
4. Interoperability
5. Plug-and-Play capability

In the recent past, various standards for home bus
35 systems have crystallized out in the field of home automation systems, based on different approaches (consumer-item oriented approach, installation-item oriented approach, computer-hardware oriented

[illegible]

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approach), although, to a greater or lesser extent, these represent specific solutions for home automation. These standards include:

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1. For the consumer-item oriented approach, the Consumer Electronics Bus (CEBus), the ESPRIT Home System (EHS) and the Home Bus System (HBS),
2. for the installation-item oriented approach, the Bati Bus, the European Installation Bus (EIB) and the Smart House and
3. for the computer-hardware oriented approach, the Local Operating Network (LON) and The Real Time Operating System Nucleus (TRON).

10

The question as to which of the standards that have been mentioned will in the end be adopted, and will thus become the de facto standard, depends essentially on the attractiveness of the respective standard for home automation. However, such a system is attractive and really useful only if there is a wide enough range of products which communicate via this network. Only if the house or dwelling occupier knows, when he or she purchases a washing machine, an electric cooker etc. that the respective appliance will communicate with his home bus system, will he or she perhaps be prepared to pay the additional costs for a home automation system, and to install such a system in his or her house. However, if the manufacturer of these appliances does not know which bus system will win the race in the end, then this manufacturer will not in fact be prepared to invest in an expensive interface for the respective bus system in order subsequently to find that the appliances cannot in fact be sold any better as a result of this investment.

In order to improve the attractiveness of the home automation system described above, an intelligent home interface (residential gateway) is therefore required which, firstly, is cost-effective and, secondly, offers the manufacturer of appliances which can be remotely controlled for home automation purposes wide variation options for the implementation of the interfaces for the bus system that is used for home automation.

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area network is transmitted from the interface in a specific record format, with a first record format part which indicates the appliance identification and/or the appliance address, a second record format part which
5 contains the control command for the appliance, and a

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third record format part which contains the control payload information.

5 A telecommunications terminal designed in this way makes it possible to drive any appliances connected to that telecommunications terminal.

10 To do this, an operator has to use a remote control unit, for example just by transmitting the appliance identification and the control command, to initiate an action in the appliance defined by the appliance identification.

15 However, in many cases, there is a customer requirement to switch scenarios on and off. A scenario in this case means that, when an instruction is transmitted by the user, a number, that is to say a selection, of the appliances which are connected to the telecommunications terminal are switched to a normal
20 mode for a specific situation. By way of example, the operator might wish to lower all the window roller shutters and switch on an outside light in the evening by transmission of the control instruction or, when he is absent, lower all the window roller shutters and
25 switch on a movement sensor in order to prevent break-ins with this evening scenario or absence scenario.

30 One way of satisfying this requirement is represented by a so-called scenario module. This scenario module is an autonomous appliance which is used in a building bus system constructed, for example, using the EIB bus approach. This scenario module drives a number of appliances centrally and, like the appliances to be controlled, is, for example, connected to the
35 telecommunications terminal. In order to switch a scenario on and off, an instruction is transmitted via the telecommunications terminal to the scenario module, which then, via the house bus that is used, controls the selection of appliances in the mode that is

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required and desired for that scenario.

This solution has the disadvantage of the need for additional hardware which, furthermore, communicates only with the building bus system that is being used.

- 5 The object on which the invention is based is to specify a method for remote control conversion, in particular in home automation systems, which can be implemented cost-effectively and easily, and can be used universally for respectively different network
10 types (for example the types of networks mentioned above).

This object is achieved by the features of patent Claim 1.

15

- In the method according to the invention - as claimed in claim 1 - a unique appliance identification is allocated to each appliance which is connected to a telecommunications terminal and is thus included in a
20 local area network, by means of which the telecommunications terminal can address the respective appliance, in particular for remote control, and by means of which each appliance is identified. An association between in each case one channel and at
25 least one appliance identification is stored in a list, in which case, if one and only one appliance identification is associated with the channel, that channel is associated with a primary data record which contains at least the individual appliance
30 identification, and, if at least one appliance identification is associated by means of at least one control command with that channel, that channel is associated with a secondary data record, which contains at least the one appliance identification with at least
35 one control command in an organized sequence. If a selection of a channel is transmitted to the telecommunications terminal, then the data record associated with that channel is read from the list. If

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the data record is a primary data record, then, on the basis of the single appliance identification contained in it, an appliance which is connected to the telecommunications

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telecommunications terminals take place very largely without any disturbance, a check is first of all carried out to determine whether a new appliance has been connected to the telecommunications terminal.

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If a new appliance has been connected, an appliance number ID is generated for that appliance, and is uniquely allocated to that appliance, for appliance identification.

5

The appliance number ID is generated such that a sequential number is allocated to the appliances. This means that the respective most recently allocated appliance number ID is incremented, and is allocated to the respective newly connected appliance.

10

As an alternative to this, it is possible to allocate to the appliance, as the appliance identification, an appliance number ID which is predetermined by that appliance and, after being connected to the telecommunications terminal, is transmitted to this telecommunications terminal during an initialization process.

15

A combination of alphabetic and numerical characters is also feasible for generating an appliance identification ID.

20

After allocation of the appliance number ID, the user is requested to state a channel number LK. If a stored secondary data record already exists for this channel number, then the appliance number ID is added to this data record and the system waits for control commands which can be associated with that appliance number to be entered, since the secondary data record implies a scenario control process, otherwise a new data record associated with that channel number LK is formed, and the appliance number ID is added to this new data record.

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When the new data record has been formed and a scenario control process is intended, the user in the next step enters at least one control command which is associated with the appliance number ID and is stored together

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with the associated appliance number ID as a secondary data record. If a new data record associated with the channel number LK has been formed, containing only a single appliance number ID - no scenario control is

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intended - and if the channel number is not intended to output any scenario control, then no control command is entered and the appliance number ID is stored as a primary data record.

5

If the check at the start 1 of the method finds that no new appliance has been connected, a check is carried out to determine whether there is any desire to drive an appliance. If this is the case, the user transmits a channel number LK.

10

On receiving the channel number LK, the data record which is stored in the list and is associated with this channel number LK is read and is evaluated.

15

If the data record contains only one appliance number ID without any control command, then the data record is a primary data record and only the appliance identified by the appliance number ID is driven, and further user statements are then requested.

20

If the data record contains at least one appliance number ID with at least one control command, then the data record is a secondary data record and an appliance identified by an appliance number ID is in each case driven in sequence, and a control command which has been stored such that it is associated with the respective appliance number ID is in each case transmitted, successively, to the respective appliance, in which case only when all the control commands which have been stored such that they are associated with an appliance number ID have been processed is the next appliance identified by the next appliance number ID driven, and the control commands which are stored in an associated manner are transmitted. After selection of the last appliance number ID and processing of the control commands which have been stored associated with the appliance number ID, all the appliances which are identified by the appliance number ID contained in the

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secondary data record are in a state defined by the control commands which are stored associated with the appliance numbers ID.

The statement of the channel number LK thus allows the user to carry out scenario control, in which at least one appliance is changed to a defined state.

- 5 If no appliance drive is desired, then the method is likewise continued at the start point 1.

The exemplary embodiments which have been mentioned represent only some of the embodiments which are possible by virtue of the invention. For example,
10 anyone skilled in the art in this field will be able to create a large number of further embodiments by means of advantageous modifications, without the character (essence) of the invention being changed in the
15 process. These embodiments are likewise covered by the invention.

Patent Claims

1. A method for remote control conversion of at least one appliance which is contained in a local area network and is connected to a telecommunications terminal, having the following features:
- 5 (a) a unique appliance identification (ID) is allocated to the appliance which is contained in the local area network and is connected to the telecommunications terminal,
- 10 (b) one subregion of a memory in the telecommunications terminal contains a stored list in which a unique association of in each case one logical channel (LK) to at least one appliance identification (ID) is specified such that, when one and only one appliance identification (ID) is associated with the logical channel (LK), that logical channel (LK) has a primary data record associated with it and, if at least one appliance identification (ID) is associated with that logical channel (LK) by means of in each case at least one control command, that logical channel (LK) has an associated secondary data record,
- 15 (c) the primary data record is formed such that at least the appliance identification (ID) is included, and the secondary data record is formed such that at least one of the appliance identifications (ID) is contained in an organized sequence with at least one control command,
- 20 (d) the appliance which is contained in the local area network and is connected to the telecommunications terminal is driven such that, if there is a primary data record associated with the logical channel, one and only one appliance which is defined by the included appliance identification is driven and, if there is a secondary data record associated with that logical channel (LK), at least one appliance which is defined by an appliance identification is driven successively in
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the organized sequence, and in each case at least one control command, which is predetermined for the respective appliance identification (ID) is transmitted to that appliance when the choice of a logical channel (LK) is transmitted to the telecommunications terminal.

2. The method as claimed in claim 1, characterized in that

the appliance which is contained in the local network and is connected to the telecommunications terminal is allocated an alphanumeric appliance identification as the appliance identification (ID), which is transmitted by the appliance that is connected to the telecommunications terminal to that telecommunications terminal.

3. The method as claimed in claim 1, characterized in that

(a) the appliance which is contained in the local area network and is connected to the telecommunications terminal is allocated an appliance number as the appliance identification (ID),

(b) the appliance number is incremented by one for each further appliance which is connected to the telecommunications terminal.

[illegible]

Method for remote control conversion

FIGURE

FIGURE

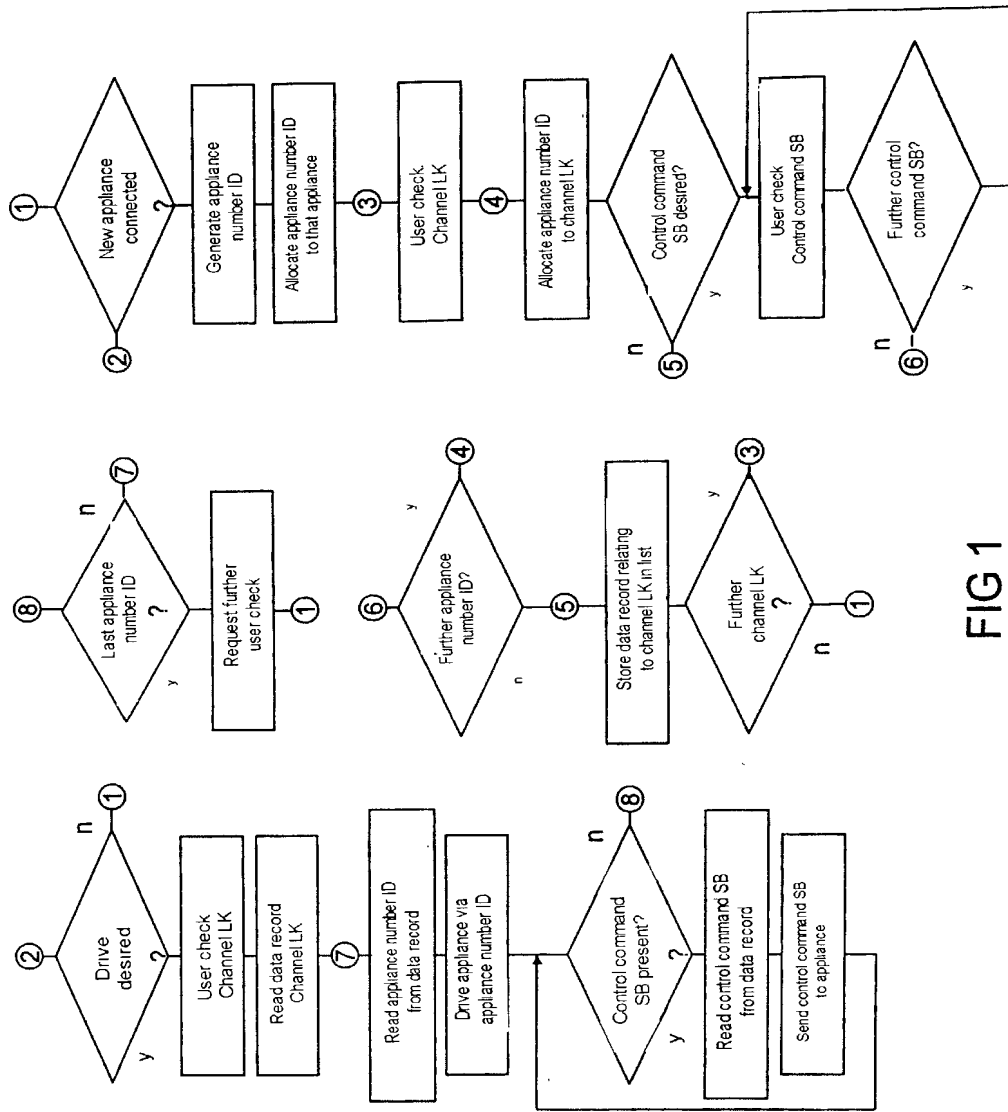


FIG 1

Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Verfahren zur Umsetzung einer Fernsteuerung

Remote control conversion method

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

☐ hier beigefügt ist

☐ is attached hereto.

☒ am 28.09.2000 als

☒ was filed on 28.09.2000 as

PCT internationale Anmeldung

PCT international application

PCT Anwendungsnummer PCT/DE00/03430

PCT Application No PCT/DE00/03430

eingereicht wurde und am _____

and was amended on _____

abgeändert wurde (falls tatsächlich abgeändert)

(if applicable)

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschließlich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1 56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

19947099.5

DE

30.09.1999

☒

☐

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

Yes
Ja

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐
Yes
Ja

☐
No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐
Yes
Ja

☐
No
Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/03430

(Application Serial No)
(Anmeldeseriennummer)

28.09.2000

(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

anhängig

(Status)
(patentiert, anhängig,
aufgegeben)

pending

(Status)
(patented, pending,
abandoned)

(Application Serial No)
(Anmeldeseriennummer)

(Filing Date D,M,Y)
(Anmeldedatum T, M, J)

(Status)
(patentiert, anhängig,
aufgeben)

(Status)
(patented, pending,
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issued thereon

German Language Declaration

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)



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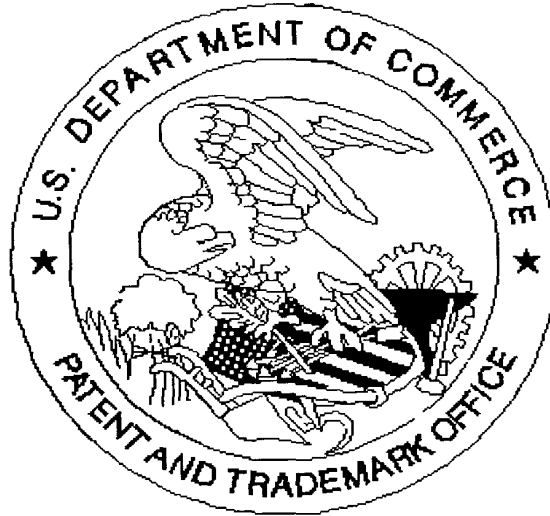
Customer No. 29177

Voller Name des einzigen oder ursprünglichen Erfinders:		Full name of sole or first inventor.	
Erich Kamperschroer		Erich Kamperschroer	
Unterschrift des Erfinders	Datum	Inventor's signature	Date
X <i>[Signature]</i>	X 5/8/82		
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Voller Name des zweiten Miterfinders (falls zutreffend):		Full name of second joint inventor, if any:	
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Wohnsitz		Residence	
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(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben)

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